Cooke, Vivian and Howard, Colin (2014) *Talk: Using Dialogic Talk in Science.* Teachers Media.

Talk is very important in science education as it can enrich and enable learning to take place. For teachers it may be seen as a skill to be developed within children thus allowing pupils to make sense of the world around them whilst providing the means to communicate ideas. It can help children to develop their understanding of complex science concepts, make sense of their own ideas and consolidate understanding. As stated by Mercer et al. (2004), pupils however need the skills to talk productively so that this talk is exploratory and so that it enables them to develop their scientific thinking further. As well providing a means to express themselves when using spoken language, talk is also a very useful tool as a rehearsal for their writing. It is by expressing and sharing their ideas that children are enabled to write about their experiences later in their learning journeys. Science provides the perfect curricular area to promote many opportunities for talk to take place, for example children asking questions about a scientific phenomenon, talking about their observations and carrying out their scientific enquiries and explaining their results.

Teacher pupil talk is another type of talk witnessed in primary classrooms and is of crucial importance in a primary science lesson. Children come to school with their own ideas about the world. A teacher's use of questioning can probe understanding and challenge any pupils' misconceptions thus helping children develop these ideas by prompting them and encouraging them to reflect on their understanding. By using talk and asking questions, a teacher can thus help guide children though their scientific enquiry and help scaffold their learning. Alexander's (2006) research on dialogic teaching looks at the different types of talk that can be observed in a primary classroom and the need for pupils and teachers to treat each other's ideas with respect and share information. Dialogic talk entails exploring answers given by pupils further, by asking them for clarification or more detail around their ideas. This type of talk also provides the opportunity for the teacher to make a link with what someone else has seen or done and consider other children's point of view.

When undertaking any science teaching it is important to consider how the use of talk has facilitated good thinking. In other words can the talk generated in such lessons be seen as cognitive and helpful to pupils' learning? By facilitating talk and using effective questioning the teacher can guide the child to make

sense of their ideas, move from simple guesses to prediction and hypothesis and help them express learning so that their understanding may be consolidated.

Let's take the following scientific activity to consider the benefits of dialogic talk for pupils. When studying the topic of light you could ask a group of children to go outside on a sunny day to draw around their shadows on the playground and by doing so they may be able record the shadow's sizes. If they repeat this process during the day the children will be able to witness how the shadows have changed in size and orientation as the day progresses. During this activity the following conversation was held between Claire and her teacher.

Teacher: What do you think is causing the shadow?
Claire: It is a dark area.
Teacher: Can you explain what is causing this dark area?
Claire: There is no light.
Teacher: Why do you think there is no light?
Claire: There is no sun there.
Teacher: What has happened to the sun I can still see it in the sky!
Claire: No, no the sun rays are being blocked by Peter so there are not any light rays on the ground.

By using dialogic talk during this activity, the teacher has been able to open up the conversation enabling them to clarify and explore the child's thinking about this phenomenon. It has allowed the child to think in depth about what is happening during this activity and by the use of conversation the child has been able to reformulate their idea based upon the prior knowledge they have held. Using talk, the teacher has allowed the child to contribute to learning, have their thinking challenged which in turn has helped them reformulate their ideas about what causes a shadow. Talk helps pupil to realise that their ideas have been valued and provides an opportunity for the teacher to assess the child's understanding and possibly plan for the next step in learning.

Talk whether it is taking place among children working in groups, or whether it is initiated by teachers provides the opportunity for learning to take place in a primary science classroom. Teachers however need to consider how they encourage pupil-pupil talk so that the talk is exploratory and productive and helps children develop their ideas. Teachers also need to model the use of talk

and use scientific language effectively. The new National Curriculum (DfE, 2013) for example underlines how the quality and variety of language that pupils hear and speak are key factors in developing their scientific vocabulary and help them articulate science concepts clearly.

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